

3600.5825  
January 15, 2003 (11:54am)

Docket: AM-5825

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and

removing said etch stop layer exposed at a bottom of said hole;  
transferring the substrate from the first transfer chamber to a second transfer chamber through an intermediate load lock;  
transferring said wafer from said second transfer chamber to a metallization chamber without exposing the substrate to an atmospheric pressure;  
depositing a barrier layer in said metallization chamber; and  
depositing a seed layer.

2. The process of Claim 1, wherein said metal seed layer is a copper seed layer.

3. The process of Claim 2, wherein said barrier layer comprises tantalum.

4. The process of Claim 1, wherein at least one of said two depositing steps is a sputtering step.

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5. (Three Times Amended) An integrated etch and metal liner process of a substrate including an etch stop layer covered with a dielectric layer covered with a patterned mask material, comprising the steps of:

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etching according to said mask through said dielectric layer to said etch stop layer to form a hole in said dielectric layer;

ashing said mask material;

removing said etch stop layer exposed at a bottom of said hole;

transferring said substrate to a first transfer chamber maintained at a sub-atmospheric pressure;

transferring said substrate from said first transfer chamber to a second transfer chamber through an intermediate load lock, wherein said second transfer chamber is isolated from said first transfer chamber;

C1  
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und

3600.5825  
January 15, 2003 (11:54am)

Docket: AM-5825

in a reactor coupled to said second transfer chamber, depositing a barrier layer; and  
in a reactor coupled to said second transfer chamber, depositing a metal seed layer;  
wherein said substrate is maintained between said etching, ashing and removing steps and  
during said transferring steps at sub-atmospheric pressures.

6. The process of Claim 5, wherein said barrier layer comprises tantalum.
7. The process of Claim 5, wherein at least one of said depositing steps is a sputtering step.
8. The process of Claim 5, wherein said transfer chamber is maintained at a pressure of less than  $10^{-6}$  Torr.

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9. (Amended) An integrated etch and metal liner process of a substrate including a stop layer covered with an oxide layer covered with a patterned photoresist mask, comprising the steps of:

a first step of transferring said substrate into a first transfer chamber maintained at a pressure of no more than 1 Torr;

a second step of transferring said substrate from said first transfer chamber to an oxide etch reactor;

in said oxide etch reactor, etching said oxide layer according to said mask to form a hole in said oxide layer;

a third step of transferring said substrate from said oxide etch reactor through said first transfer chamber to a second transfer chamber isolated from and first transfer chamber and maintained at a pressure of no more than  $10^{-6}$  Torr; and

a fourth step of transferring said substrate from said second transfer chamber to at least one reactor to deposit a layer in said hole.

3600.5825  
January 15, 2003 (11:54am)

Docket: AM-5825

10. The process of Claim 9, further comprising ashing said photoresist layer in said oxide etch reactor.

11. (Already Amended) The process of Claim 9, further comprising:  
a fifth step of transferring said substrate from said oxide etch reactor through said first transfer chamber to a plasma ashing reactor attached to said first transfer chamber; and  
in said plasma ashing reactor, ashing said photoresist layer;  
wherein said third step of transferring comprises transferring said substrate from said plasma ashing reactor through said first transfer chamber to said second transfer chamber.

C 14. (Amended) An integrated process performed in processing reactors connected to first and second central vacuum transfer chambers held at pressures of no more than 1 Torr, said first and second central vacuum transfer chambers being linked by a doubly gated vacuum passageway, said processing reactors, said first and second central vacuum transfer chambers, and said vacuum passageway being formed on a single platform, said process comprising the steps of:

BY loading into said first central vacuum transfer chamber through a load lock a substrate having a dielectric layer covered by a patterned resist material;

in at least one etching reactor connected to said first central vacuum transfer chamber through a respective slit valve, etching said dielectric layer in said substrate according to said patterned resist material to form a hole therethrough and thereafter ashing said resist material;

in at least one deposition reactor connected to said second central vacuum transfer chamber through a respective slit valve, depositing a liner layer on sides of said hole;

wherein said substrate is not exposed to atmospheric pressure between said etching step and said depositing step.

15. The process of Claim 14, wherein said liner layer includes a barrier layer and a

3600.5825  
January 15, 2003 (11:54am)

Docket: AM-5825

copper seed layer.

16. The process of Claim 14, wherein said at least one deposition reactor includes a sputter reactor with a copper target for depositing said copper seed layer.

17. The process of Claim 14, wherein said at least one etching reactor includes an etch reactor for etching said dielectric layer and an ashing reactor for ashing said resist material.

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19. (Amended) The process of Claim 14, wherein said at least one etching reactor includes an etch reactor for etching said dielectric layer and an ashing reactor for ashing said resist material and wherein said at least one deposition reactor includes a first sputter reactor for depositing at least a part of a barrier layer and a second sputter reactor for depositing a copper seed layer.

20. (Amended) The process of Claim 14, wherein said second central vacuum transfer chamber is held at a pressure of no more than  $10^{-6}$  Torr.

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22. (New) The process of Claim 1, wherein said etching is performed using a fluorine-based chemistry.

23. (New) The process of Claim 1, wherein said intermediate loadlock is doubly gated.

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24. (New) The process of Claim 5, wherein said etching step uses a fluorine-containing etching gas.

25. (New) The process of Claim 5, wherein said intermediate loadlock is doubly gated.

Docket: AM-5825

3600.5825  
January 15, 2003 (11:54am)

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26. (New) The process of Claim 9, wherein said etching step uses a fluorine-containing etching gas.

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27. (New) The process of Claim 9, wherein said first and second transfer chambers are isolated by a doubly gated load lock.

28. (New) The process of Claim 14, wherein said etching step uses a fluorine-containing etching gas.